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ABSTRACTS

MEDICINE

Histochemistry of the Nucleus.

M. LONG: *Bull. Sloane Hosp. Wom.*, 8: 96, 1962.

Nucleolar analysis as a measure of ribonucleic acid (RNA) demonstrates that nucleoli show progressive increase in number, size and irregularity of form with increased grade of malignancy. These alterations imply augmented RNA activity or protein synthesis and growth of cells with loss of differentiation in tumours. From this study, then, only RNA appears to be related basically to the malignant process. ROSS MITCHELL

Biochemical Changes Caused by Glucose-6-Phosphate Dehydrogenase Deficiency in Erythrocytes.

E. PITKÄNEN AND P. VUOPIO: *Ann. Med. Intern. Fenn.*, 51: 153, 1962.

Three cases of congenital non-spherocytic hemolytic anemia were studied. The red cell glucose-6-phosphate dehydrogenase level was constantly below normal, whereas the activity of 6-phosphogluconate dehydrogenase, GO-transaminase and aldolase were increased. No inhibitory or enhancing effects on the glucose-6-phosphate dehydrogenase activity could be found by incubating hemolysates of deficient red cells with normal red cell stroma.

The reduced-glutathione content of deficient red cells was found to have decreased. The instability of reduced glutathione was demonstrated by incubation in the presence of acetylphenylhydrazine. The stability of reduced glutathione was markedly increased by the addition of 6-phosphogluconate into the incubation mixture.

No retention of red cell glucose-6-phosphate could be demonstrated. The ATP content was shown to vary from normal low to subnormal levels. The red cell sodium, potassium and acid soluble phosphorus content was normal, whereas the water content was somewhat increased.

Chronic Idiopathic Non-Hemolytic Jaundice (Dubin-Johnson Syndrome).

W. H. SHAFER AND F. F. WHITCOMB, JR.: *Cleveland Clin. Quart.*, 29: 132, 1962.

The Dubin-Johnson syndrome often has a familial distribution, may occur in either sex and has a wide ethnic distribution. The majority of patients have noticed jaundice before 20 years of age. The degree of jaundice as well as the associated symptoms may fluctuate, and exacerbations are often precipitated by infections, surgery or pregnancy.

The majority of patients have abdominal pain, often in the region of the liver. Other symptoms are weakness, nausea or vomiting, anorexia and diarrhea. Many patients have enlargement of the liver which may be tender.

Serum bilirubin levels range from 2.4 to 19 mg. per 100 ml. Direct reacting bilirubin accounts for about 60% of the total bilirubin. Hematologic studies show no evidence of increased destruction of red blood cells. Mild elevations of serum alkaline phosphatase levels and intermittently positive flocculation tests occur. Retention of sulfobromophthalein frequently occurs, and on oral cholecystography there is usually poor visualization of the gallbladder.

Histologic examination of the liver reveals an intracellular, coarsely granular, lipochrome pigment having a centrolobular distribution. The origin and composition of this pigment are not known. In some cases a melanin-like pigment accumulates. The exact metabolic defect in the hepatic cells is not known, but apparently it is in the excretory mechanism of the cells. Electron microscopy has shown that the abnormal pigment is located in a cytoplasmic particle known as a lysosome, which is thought to function in the excretion of conjugated bilirubin. This syndrome may be related to the Rotor syndrome which is also a familial hyperbilirubinemia of conjugated bilirubin but without pigment in the hepatic cells.

Progressive hepatic disease does not occur in patients having the Dubin-Johnson syndrome; however, recurrence of symptoms with temporary disability is usual. There is at present no specific treatment for this disorder. ROSS MITCHELL

Serum Alkaline Phosphatase Levels in Aged Diabetic Patients.

S. G. JOKIPH AND A. E. HEINO: *Ann. Med. Intern. Fenn.*, 51: 189, 1962.

In aged people with diabetes mellitus the serum alkaline phosphatase levels were within normal limits: they did not differ significantly from those of healthy old subjects.

The serum alkaline phosphatase level did not seem to be related to the degree of hyperglycemia or to the duration of diabetes.

Insulin-treated old diabetics did not show serum alkaline phosphatase values differing from the normal, nor did old diabetics treated by oral antidiabetic preparations have increased serum alkaline phosphatase levels, provided the generally accepted daily doses were not exceeded.

SURGERY

Experimental Study of the Duodenal Inhibition of Gastric Secretion.

E. M. NANSON, M. TY, JR. AND D. MULDER: *Ann. Surg.*, 156: 734, 1962.

Inhibition of gastric secretion was studied in the animal laboratory on dogs in which a Heidenhain pouch and Thiry duodenal fistula had been prepared. The response of depression of gastric secretion by irrigation of the duodenum with acid at pH 2.0 was not abolished by the preliminary use of local tetracaine (Pontocaine) anesthesia; inhibition is therefore presumably hormone-mediated. Irrigation of the Thiry fistula with cream also produced an inhibitory response in the Heindenhain pouch, but saline and sodium bicarbonate did not.

It is believed that the duodenal inhibition mechanism of gastric secretion may play a role in protecting the gastric and duodenal mucosa and that impairment of this mechanism may play a part in the development of gastric hypersecretion. BURNS PLEWES

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Serotonin Release Following Instillation of Hypertonic Glucose into the Proximal Intestine.

T. DRAPANAS, J. C. MCDONALD AND J. D. STEWART: *Ann. Surg.*, 156: 528, 1962.

The occurrence of the dumping syndrome after gastrectomy or operations in which the pyloric function is destroyed is only partially explained by the changes in blood volume caused by the rapid passage of hyperosmolar material into the intestine. The serotonin content of portal, systemic, arterial and venous blood was determined under experimental conditions in dogs by serial spectrofluorimetric analysis during dumping tests. The dogs exhibited restlessness, vomiting and diarrhea when serum serotonin became increased in the portal blood but less frequently in association with an increase in the level in systemic blood. Since serotonin levels are not appreciable in plasma or thoracic duct lymph at any time, it seems that serotonin enters the circulation via the platelets in portal venous blood. A slow continuous infusion of serotonin into the portal vein caused a symptomatic response at levels reached during the dumping test.

Serotonin may be the humoral agent responsible for some of the early vasomotor and gastrointestinal manifestations accompanying the dumping syndrome.

BURNS PLEWES

Origin of the Ulcerogenic Hormone in Endocrine-Induced Ulcer.

R. M. ZOLLINGER, D. W. ELLIOTT, G. L. ENDAHL, G. N. GRANT, J. T. GOSWITZ AND D. A. TAFT: *Ann. Surg.*, 156: 570, 1962.

In the seven years since the Zollinger-Ellison syndrome was described, 132 cases have been reported in which a non-beta-cell tumour of the pancreas was associated with intractible ulcer and/or severe enteritis. Priest and Alexander first described the enteritis, which occurs in one-third of cases and is the only symptom in 10%. Primary ulcer of the jejunum near the ligament of Treitz was noted in 25% of cases; this ulcer often perforates. The ulcerogenic hormone was extracted from the tumour and its metastases by Gregory. The tumour is malignant in 62% of cases. In 25% one or more other glands of internal secretion were involved: parathyroid, adrenal, pituitary, or thyroid, but the adenomas in these instances did not contain the gastric secretagogue.

Total gastrectomy remains the treatment of choice in the management of this ulcerogenic tumour of the pancreas.

BURNS PLEWES

GENETICS

Incidence of Thyrocytotoxic Factor and other Antithyroid Antibodies in the Mothers of Cretins.

R. W. CHANDLER, R. M. BLIZZARD, W. HUNG AND M. KYLE: *New Engl. J. Med.*, 267: 376, 1962.

The concept that thyroid autoantibodies may cross the placenta and sometimes produce, or be associated with, fetal thyroid damage has been investigated by the authors and others. Data presented in this report further support this concept and suggest that the occurrence of some cases of athyreotic cretinism is closely associated with, or possibly directly related to, the presence of an autoimmune process in the mother.

A significantly greater incidence of a thyroid autoimmune process in mothers of athyreotic cretins (24.8%) than in mothers of normal offspring (66%) was demonstrated. In addition to agglutinating and complement-fixing antibodies, which were previously reported to cross the placenta, thyrocytotoxic antibodies and antibodies to an unidentified component of colloid were found to cross this barrier.

Although there was a significantly higher incidence of antithyroid antibodies in the sera of mothers of cretins than in the control sera, analysis of the data did not support the thesis that these antibodies are destructive. Rather, it is suggested that these antibodies reflect an autoimmune process and that some unknown factor is responsible.

Because the unfixed Coons test correlated with the thyrocytotoxic-antibody test, these two procedures appear to demonstrate the same antibody. The failure to find a correlation between the complement-fixing and thyrocytotoxic-antibody tests suggests that these techniques measure different antibodies, although there are reports in the literature that they are identical.
(Authors' summary)

Chromosomal Translocation in a Mongoloid Girl with some Atypical Features.

K.-H. GUSTAVSON: *Acta Paediat. (Upps.)*, 51: 337, 1962.

In 1956 Tjio and Levan established that the normal number of human chromosomes was 46. Most patients with mongolism have 47 chromosomes and the extra chromosome is generally considered to be No. 21. There is, however, a small group of mongoloid patients having chromosomal variations other than that of trisomy for chromosome No. 21. This report concerns a mongoloid patient with some atypical features who was shown, on cytological analysis, to have a karyotype with 46 chromosomes, including a probable 21/22 translocation. Her development was only slightly retarded and the anomalies suggesting mongolism were relatively few. In addition, there were no skeletal anomalies characteristic of mongolism and the iliac index was normal. There were no signs of abnormal sexual development. Chromosome studies based on cell cultures derived from bone marrow and skin biopsies revealed a chromosome number of 46 and a consistent karyotype pattern which was tentatively interpreted as a translocation between a chromosome No. 21 and a chromosome No. 22. Typical sex chromatin was present in 45-55% of the interphase nuclei. Both parents had apparently normal karyotypes.